



U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**

**COMPETENT AUTHORITY CERTIFICATION  
FOR A TYPE FISSILE  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/9329/AF-96, REVISION 5**

East Building, PHH-23  
1200 New Jersey Avenue Southeast  
Washington, D.C. 20590

This certifies that the radioactive material package design described has been certified by the Competent Authority of the United States as meeting the regulatory requirements for a Type AF packaging for fissile radioactive material as prescribed in the regulations of the International Atomic Energy Agency<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - Model No. S300.
2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9329, Revision 5 (attached).
3. Criticality - The minimum criticality safety index is as assigned in the NRC Certificate of Compliance. The maximum number of packages per conveyance is determined in accordance with Table X of the IAEA regulations cited in this certificate.
4. General Conditions -
  - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
  - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
  - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

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<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

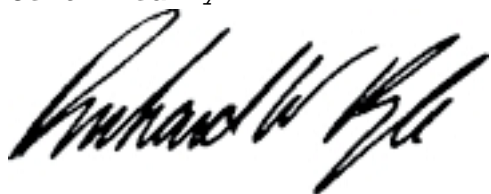
<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/9329/AF-96, REVISION 5**

- d. This certificate provides no relief from the limitations for transportation of plutonium by air in the United States as cited in the regulations of the U.S. Nuclear Regulatory Commission 10 CFR 71.88.
  - e. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations<sup>1</sup> shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
5. Special Conditions -
- a. Prior to each shipment, the package must be inspected to ensure that the packaging is conspicuously and durably marked with its model number, serial number, gross weight and package identification number.
  - b. Transport by air is not authorized.
6. Marking and Labeling - The package shall bear the marking USA/9329/AF-96 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on January 31, 2022. On January 31, 2017, this certificate supersedes all previous revisions of USA/9329/AF-96.

This certificate is issued in accordance with paragraph 814 of the IAEA Regulations and Section 173.471 and 173.472 of Title 49 of the Code of Federal Regulations, in response to the December 01, 2016 petition by National Nuclear Security Administration, Department of Energy, Albuquerque, NM, and in consideration of other information on file in this Office.

Certified By:



William Schoonover  
Acting Associate Administrator for Hazardous Materials Safety

**Dec 15 2016**

(DATE)

Revision 5 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9329, Revision 5.

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9329	5	71-9329	USA/9329/AF-96	1 OF	4

2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

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| a. ISSUED TO ( <i>Name and Address</i> )<br>National Nuclear Security Administration<br>P.O. Box 5400<br>Albuquerque, NM 87185 | b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION<br>Los Alamos National Laboratory<br>Application, Revision No. 5, dated October 14, 2016. |
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4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

a. Packaging

- (1) Model No.: S300
- (2) Description

The Model No. S300 package is a cylindrical container that is approximately 89 centimeters (35 inches) in overall height and 60 centimeters (23 inches) in overall diameter. The Model No. S300 is comprised of an overpack, pipe component, and a shielding insert. The Model No. S300 is designed to transport a single special form capsule (SFC). The maximum gross weight of the package is 217.7 kilograms (480 lbs).

The overpack design utilizes a standard 55-gallon drum as the outer container. A standard bolted clamping ring secures the drum lid to the drum body. Within the drum body is a rigid polyethylene liner (body and lid). Lid liner and lid are pierced and the drum lid is fitted with a filter vent. Within the liner is cane fiberboard dunnage and a sheet of plywood to provide shock absorption for the pipe component.

The pipe component consists of a stainless steel cylindrical pipe welded to a stainless steel flat cap at the bottom end and a bolted pipe flange at the other end. The pipe component is closed with a stainless steel flat lid attached to the flange with 12 stainless steel bolts. A filter vent is installed in the lid. The flange-to-lid seal is either a butyl or ethylene propylene elastomeric o-ring.

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9329	5	71-9329	USA/9329/AF-96	2 OF	4

5. a. Packaging (continued)

(2) Description (continued)

The shielding insert is located within the pipe component. The shielding insert is made from solid high density polyethylene plastic. Within the shielding insert is a cylindrical opening sized to accommodate the SFC.

(3) Drawings

The packaging is constructed in accordance with AREVA Drawing No. 60999-SAR, sheets 1 through 3, Revision 1, S300 Packaging SAR Drawing.

b. Contents

(1) Type and form material

Content No. 1: Plutonium-Beryllium ( $\alpha,n$ ) neutron sources (not to exceed  $1.519E+5$  neutrons/second per gram of plutonium), or plutonium-based ( $\alpha,n$ ) neutron sources.

Content No. 2: Plutonium, other than neutron sources with ( $\alpha,n$ ) target material, in solid form.

Content Nos. 1 and 2 must meet the requirements of special form sources and are limited to:

- (a) The Model II source capsule - IAEA Certificate of Competent Authority Special Form Radioactive Materials Certificate Number USA/0696/S-96, issued by the U.S. Department of Transportation (DOT), assembled in accordance with AEA Technology QSA, Inc., Drawing No. R20047, Rev. B, or LANL Drawing No. 90Y-219998, Rev. H.
- (b) The Model III source capsule - IAEA Certificate of Competent Authority Special Form Radioactive Materials Certificate Number USA/0695/S-96, issued by the DOT, assembled in accordance with AEA Technology QSA, Inc., Drawing No. R20048, Rev. B, or LANL Drawing No. 90Y-220045, Rev. A.

**CERTIFICATE OF COMPLIANCE  
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1. a. CERTIFICATE NUMBER <b>9329</b>	b. REVISION NUMBER <b>5</b>	c. DOCKET NUMBER <b>71-9329</b>	d. PACKAGE IDENTIFICATION NUMBER <b>USA/9329/AF-96</b>	PAGE <b>3</b>	OF <b>4</b>	PAGES <b>4</b>
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5. b. Contents (continued)

(2) Maximum quantity of material per package:

One source capsule, containing a maximum quantity of fissile plutonium (Pu-239 plus Pu-241) as shown below.

Non-Exclusive Use Shipment		Exclusive Use Shipment	
Model II	Model III	Model II	Model III
Content No. 1			
206 grams fissile plutonium	160 grams fissile plutonium	350 grams fissile plutonium	160 grams fissile plutonium
Content No. 2			
300 grams plutonium	160 grams plutonium	300 grams plutonium	160 grams plutonium

Source capsule may contain radionuclides listed below within the ranges shown.

Radionuclide	Percentage of total plutonium mass
Pu-238	0 - 0.5%
Pu-239	78 - 97%
Pu-240	3 - 21%
Pu-241	0 - 3%
Pu-242	0 - 2%
Am-241	0 - 2.5%

Total quantity of radioactive material within a package may not exceed a Type A quantity.

c. Criticality Safety Index

Content No. 1	0.3
Content No. 2	4.0

6. Transport by air is not authorized.

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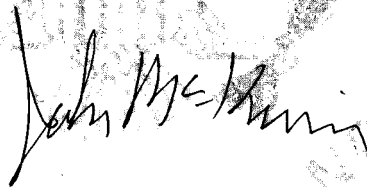
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9329	5	71-9329	USA/9329/AF-96	4 OF	4

7. In addition to the requirements of Subpart G of 10 CFR Part 71:
  - a. Each package shall be prepared for shipment and operated in accordance with the "Package Operations," in Chapter 7 of the application.
  - b. Each package shall be tested and maintained in accordance with the "Acceptance Tests and Maintenance Program," in Chapter 8 of the application.
8. Prior to each shipment, the package must be inspected to ensure the packaging is conspicuously and durably marked with its model number, serial number, gross weight, and package identification number, USA/9329/AF-96.
9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
10. Revision No. 4 of this certificate may be used until January 31, 2017.
11. Expiration date: January 31, 2022.

REFERENCES

Los Alamos National Laboratory Application, Revision No. 5, dated October 14, 2016.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



John McKirgan, Chief  
Spent Fuel Licensing Branch  
Division of Spent Fuel Storage Management  
Office of Nuclear Material Safety  
and Safeguards

Date: October 31, 2016